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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,668	04/23/2007	Dietrich Stein	40149/01501(067P 0750)	5013

30636 7590 07/21/2009  
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EXAMINER
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WILBUR, NICHOLAS A

ART UNIT	PAPER NUMBER
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3672

MAIL DATE	DELIVERY MODE
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07/21/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/580,668	<b>Applicant(s)</b> STEIN, DIETRICH	
	<b>Examiner</b> NICHOLAS A. WILBUR	<b>Art Unit</b> 3672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 20-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-36 and 38 is/are rejected.
- 7) ☒ Claim(s) 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/23/2007</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

2. The disclosure is objected to because of the following informalities:

On page 1, line 1, the specific reference to certain claim numbers is objectionable since it can be appreciated that during the prosecution of the application the claim numbering may change. This entire section should be deleted.

Appropriate correction is required.

### ***Claim Objections***

3. Claims 33 and 38 are objected to because of the following informalities: Claim 33 line 2 contains the words “hydraulically” and “pneumatical” which appear to be typographical errors for the words --hydraulic-- and --pneumatic--, respectively.

Claim 38 line 1 recites “the device according to **claims** 28” wherein the word “claims” appears to be a typographical error for the word --claim--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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6. Claims 20, 24, 25, 27-31, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takigawa (US 4,774,470) in view of Cherrington (EP 0 291 193 A1).

Regarding claim 20, Takigawa discloses a method for trenchless underground laying of pipelines comprising: from a starting shaft, driving through a ground a shield tunnel boring machine (1) and pipes following the machine (pipe sections S, as shown in Figure 1), producing a borehole using the machine, a diameter of the borehole being slightly larger than the diameter of the pipe (as shown in Figure 1). Takigawa also discloses wherein during an advance of the pipes, in a region of the machine, an examining step is performed using a series of transmitters and receivers (101-104) solidifying the ground based upon the examining step using a solidifying medium (see column 6, lines 29-34).

Takigawa fails to disclose filling an annular space between the borehole wall and pipes with a supporting and lubricating agent.

However, Cherrington discloses filling an annular space between a borehole wall and pipes with a supporting and lubricating agent (column 5 lines 53-58 through column 6, lines 1-15).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method for trenchless underground laying of pipelines of Takigawa to include the lubricating step of Cherrington in order to ensure that the pipes can slide easily through the hole while the boring machine is in operation, therefore not having the pipes stick to the walls of the borehole so the boring machine will run without needing to exert excess force.

Regarding claim 24, Cherrington further discloses wherein the supporting and lubricating agent is a bentonite suspension (see column 6, line 12).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use bentonite as the lubricating agent for the pipes because bentonite suspensions are well known in the art as being good pipe lubricants.

Regarding claim 25, Takigawa further discloses wherein the solidifying medium changes into a solid state (changing from a liquid to a solid state is an inherent property of mortar).

Regarding claim 27, Takigawa discloses performing the examining and performing steps continuously (see column 6, lines 29-34), but fail to explicitly disclose repeating these steps at a spacing of a few pipe lengths.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to repeat the examining and performing steps of this method, because duplication of essential steps of a method involves only routine skill in the art. See MPEP 2144.04.

Regarding claim 28, Cherrington further discloses a device for implementing the method of trenchless underground laying of pipes as taught by Takigawa and

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Cherrington, the device comprising a first test and injection device (40) having a lubricating agent and a solidifying medium (see column 7, lines 35-39 of Cherrington), that is situated in a region of the boring machine (as shown in Figure 2 of Cherrington).

Regarding claim 29, Cherrington further discloses supply lines for supplying the solidifying medium to the injection device (cement line 78, as shown in Figure 10).

Regarding claim 30, Cherrington further discloses a controllable mixing unit (80, see column 9, lines 11-12) for the solidifying medium, wherein the mixing unit is located in a first line of the lines that supply only the solidifying medium (as shown in Figure 10).

Regarding claim 31, Cherrington further discloses wherein the injection device has openings (discharge nozzles 44) which discharge into an annular space, and where the injection device is connected to at least one of the supply lines (as shown in Figure 2).

Regarding claim 38, Cherrington further discloses having a second test and injection device being situated in the pipes behind the first injection device (see column 6, lines 32-45).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method of trenchless laying of pipes of Takigawa

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and Cherrington to further include the test and injection devices of Cherrington in order to ensure that the pipes will be properly lubricated at all times during the advancement of the pipes, and also to be capable of injecting a solidifying medium at any point during the drilling to ensure that there is no cave-in of the borehole walls.

7. Claims 21-23, and 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takigawa in view of Cherrington as applied to claim 20 or 28 above, and further in view of Girault (US 4,116,011).

Regarding claims 21-23, Takigawa and Cherrington disclose a method for laying underground pipelines, but fail to disclose wherein the sealing of a borehole wall is tested using a test medium, wherein a pressure loss of the test medium is determined, or wherein the supporting and lubricating agent is used as the test medium.

However, Girault discloses a method for laying pipelines, wherein the sealing of the borehole wall is tested by determining a pressure loss of the test medium, wherein the test medium is the supporting and lubricating agent (see column 5, lines 36-48).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method for trenchless underground laying of pipelines of Takigawa and Cherrington to include the step of testing the sealing of a borehole wall by determining the pressure loss of the lubricating agent of Girault in order to ensure that the pipeline is properly sealed within the borehole, because it is



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well known in the art that improperly sealed holes can lead to corrosion or other damages to the underground pipes.

Regarding claims 32-36, Takigawa and Cherrington disclose a device for implementing the method of laying underground pipes, but fail to disclose wherein there are first and second blocking elements, the first blocking elements situated movably with the second blocking elements, and the second blocking element is situated in a stationary manner near the starting shaft, nor do they disclose there is a third blocking element situated one pipe length behind the first element.

However, Girault discloses a first blocking element (seal 15) located at the front of the pipes (as shown in Figure 1), a second blocking element (14) situated in a stationary manner at the starting shaft (as shown in Figure 1), and a third blocking element (16) situated one pipe length behind the first blocking element (as shown in Figure 1). The mutual spacing of the first and second blocking elements changes in a longitudinal direction (as pipes are introduced to the borehole). The blocking elements expand in a pneumatic manner in the radial direction to create the seal of the pipes to the borehole wall.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method for trenchless underground laying of pipelines of Takigawa and Cherrington to include the blocking elements of Girault in order to create a strong seal between the pipes and the borehole wall, therefore

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increasing the lifetime of the pipes because air and water will be sealed out from damaging the pipes.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takigawa in view of Cherrington as applied to claim 25 above, and further in view of Landrichter (US 6,565,285).

Takigawa and Cherrington disclose a method for laying underground pipelines but fail to disclose wherein the solidifying medium is made up of at least two components, and is fired in at least two successive phases.

However, Landrichter discloses a method for laying underground pipes that includes injecting a solidifying medium that is made up of at least two components (see column 4, lines 42-50), and also discloses injecting the medium at a continuous rate.

It is noted that although Landrichter discloses discharging the at least two component solidifying medium at a continuous rate, this method of injecting would provide an identical result to that of a method of injecting in at least two successive phases.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method of Takigawa and Cherrington to include the step of having an at least two component solidifying medium in order to ensure that the solidifying medium did not harden prematurely. It is well known in the art that passing pre-mixed solidifying medium through tubing can lead to the medium hardening in the tubes, this method prevents that from happening.

***Allowable Subject Matter***

9. Claim 37 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hayashi et al. (US 5,527,135) for a method of installing a pipeline that uses a supporting a lubricating agent.

Wagner et al. (US 5,324,139) for a boring machine that uses a series of sensors to detect abnormal rock formations in the ground that is being drilled.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICHOLAS A. WILBUR whose telephone number is (571)270-5746. The examiner can normally be reached on Monday-Friday 7:30 AM- 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on (571)272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David J. Bagnell/  
Supervisory Patent Examiner, Art Unit 3672

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07/16/2009